

Remarks

Claims 1-18 are in the application, of which claims 1 and 12 are in independent form. Applicant acknowledges with appreciation the Examiner's indication that claim 14 recites allowable subject matter.

Claims 8 and 9 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Specifically, the Examiner states that "claim 8 claims the impact portion to be of polyolefin" and "claim 1 sets forth the impact portion as being polyethylene" (page 3). Applicant has corrected the typographical error in claim 8 so that amended claim 8 recites "an integral structure made of an ultrahigh molecular weight polyethylene." The correction of this typographical error in claim 8 should rectify any indefiniteness in claim 9, because claim 9 depends from claim 8.

Claims 1-13 and 15-18 stand rejected under 35 U.S.C. § 103(a) for obviousness over applicant's prior art FIG. 1B in view of U.S. Publication No. 2004/0103948 to Scheelen et al and further in view of U.S. Patent No. 5,868,514 to Gibson. The Examiner states that "Applicant's Prior Art Figure 1B discloses the basic claimed structure including a downcomer for use in conveying a substance from an upper level of a marine vessel to a lower level of the marine vessel with a pair of spaced apart mounting portions and an elongate impact portion" (page 2) (reference numeral omitted). However, the Examiner admits that applicant's Figure 1B does not disclose "the downcomer being formed of ultrahigh molecular weight polyethylene" (page 2). The Examiner also states that "Gibson teaches a pipe of ultrahigh molecular weight polyethylene and mounting holes" and that "Scheelen et al. teach a pipe with a polyethylene or polyolefin inner and outer portions, including a pigment, ultraviolet stabilizer, is formed by co-extrusion, and can be joined end to end" (page 2) (reference numerals omitted). Applicant responds to the Examiner's rejection as follows.

With respect to Gibson, applicant asserts that Gibson is nonanalogous art and thus cannot support an obviousness rejection. A two-step test, as follows, is used to analyze whether art is analogous: "[i]n order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either [1] be in the field of applicant's endeavor or, if not, then [2] be reasonably pertinent to the particular problem with which the inventor was concerned" (*In re Oetiker*, 977 F.2d 1443, 1446 (Fed. Cir. 1992), *quoted by* MPEP 2141.01(a)).

With respect to the first step, Gibson describes "[a] water vehicle lift includ[ing] a winch which is operable to extend and retract an elongated flexible cable to lower and

raise a platform on which a small water vehicle may rest” (Abstract). In contrast, the present application relates to a downcomer for use in conveying a substance such as wastewater from an upper level of a marine vessel to a lower level of the marine vessel (paragraphs [0001] & [0002]). Gibson is not in the field of applicant’s endeavor because the field of Gibson, *i.e.*, lifts for small watercrafts, is not within the field of the present invention, *i.e.*, marine vessel construction and onboard wastewater handling.

With respect to the second step, Gibson does not describe a particular problem with which the inventor was concerned. Instead, Gibson states that “Applicant is unaware of any such device including all of the features and aspects of the present invention” (col. 1, lines 12-13). Further, Gibson does not mention any advantages or benefits conferred to the water vehicle lift by including an ultrahigh molecular weight polyethylene lining. Moreover, the use of a lining made of ultrahigh molecular weight polyethylene is not central to the inventive concept or its solution of any problems with the prior art, as evidenced by the fact that it is not recited in any of the claims.

In contrast, the present application states that “[t]he present inventor has recognized a need for a downcomer that can absorb a substantial amount of energy upon impact without permanently deforming, that is highly resistant to rust and corrosion, that is easily installed and repaired, that is lightweight and hydrodynamic at the water line, and that requires little or no maintenance” (paragraph [0006]). The use of ultrahigh molecular weight polyethylene relates to these stated goals.

Because Gibson does not discuss a problem to be solved or reasons why the use of an ultrahigh molecular weight polyethylene lining is preferable, there is no reason to think that one of ordinary skill in the art of downcomers would think to look at art in the field of small water vehicle lifts. As stated in *In re Clay*, “[i]f a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem, and that fact supports use of that reference in an obviousness rejection. . . . If it is directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it” (966 F.2d 656, 659 (Fed. Cir. 1992) (holding that storage of refined liquid hydrocarbons and extraction of petroleum are nonanalogous arts).

With reference to Gibson, applicant also disagrees with the Examiner’s statement that “Gibson teaches a pipe of ultrahigh molecular weight polyethylene” (page 2). Gibson describes “a fitting which has a generally triangular configuration . . . [and] includes a conduit having an inner lining preferably made of a material such as, for example, ultrahigh molecular weight polyethylene” (col. 4, lines 15-21) (reference numerals omitted).

Gibson states that “[a] pipe is received within the lining” (col. 4, line 21) (reference numeral omitted). Gibson states that “[t]he pipe is preferably made of a material such as stainless steel” (col. 5, lines 13-14) (reference numerals omitted). Thus Gibson does not describe a pipe made of ultrahigh molecular weight polyethylene, as stated by the Examiner. Rather, Gibson describes a lining made of ultrahigh molecular weight polyethylene and a pipe made of stainless steel. As such, Gibson does not describe an “elongate impact portion made of an ultrahigh molecular weight polyethylene,” as recited in claim 1.

Thus applicant asserts that (1) Gibson is nonanalogous art that cannot be relied on in making an obviousness rejection and (2) Gibson does not describe “an elongate impact portion made of an ultrahigh molecular weight polyethylene,” as recited in claim 1. Because Gibson is the only prior art reference cited by the Examiner that describes the use of ultrahigh molecular weight polyethylene, applicant asserts that the Examiner’s rejection of claims 1-13 and 15-18 fails for these two reasons.

With respect to Scheelen et al. (“Scheelen”), applicant asserts that Scheelen is non-analogous art that cannot support an obviousness rejection. With respect to the first step of the two-step test, Scheelen describes a multi-layered pipe that transports pressurized fluid and that is embedded in the ground (paragraphs [0002]-[0003]). In contrast, the present application relates to a downcomer for use in conveying a substance such as wastewater from an upper level of a marine vessel to a lower level of the marine vessel (paragraphs [0001] & [0002]). Scheelen is not in the field of applicant’s endeavor because the field of Scheelen, *i.e.*, buried, multi-layer pipes that transport pressurized fluids underground, is not within the field of the present invention, *i.e.*, marine vessel construction and onboard wastewater handling.

With respect to the second step of the two-step test, Scheelen states that “[t]he present invention aims to overcome the disadvantages of the prior art [pipes]” (paragraph [0006]). Scheelen mentions the following problems with prior art polyethylene pipes: “when these known pipes are embedded in or posed on a soil comprising rocks and stones, scratching of the pipes can occur giving rise to crack growth. Moreover, point loads on the pipeline can occur by rock impingement and give also rise to crack growth” (paragraph [0003]). Scheelen then states that “coextruded two-layered pipe” has “a better resistance to scratching” (paragraph [0004]), but “[t]he two-layered pipes disclosed in the prior art still have the need to increase their resistance to stress cracking, in particular to increase their resistance to point loading” (paragraph [0005]). The invention of Scheelen “aims to

overcome the disadvantages of the prior art, in particular by providing improved multi-layered polyethylene pipe” (paragraph [0006]).

In contrast, the present application describes a downcomer that must withstand “multiple high-force impacts during harsh docking conditions and collisions with tugboats” without denting (paragraph [0003]). A preferred downcomer also “is highly resistant to rust and corrosion, . . . is easily installed and repaired, . . . is lightweight and hydrodynamic at the water line, and . . . requires little or no maintenance” (paragraph [0006]). A solution that addresses all of these problems is to form an “elongate impact portion made of an ultrahigh molecular weight polyethylene,” as recited in claim 1.

The problems to be solved in Scheelen and the present invention differ. Specifically, Scheelen seeks to maintain high creep rupture strength (which relates to the ability of a pipe to withstand sustained internal fluid pressure) and to improve resistance to scratching caused by rocks and stones which, over time, can give rise to stress crack growth. In contrast, embodiments of the present invention seek to improve resistance to denting of a downcomer caused by high-force collisions with boats and docks. Further, the solutions to the problems differ greatly. Scheelen improves resistance to stress cracking while maintaining high creep rupture strength by forming a two-layer pipe that has an interior layer having a resistance to stress cracking notched pipe test (NPT) of 8,000 hours and an outer layer having an NPT of less than 8,000 hours. In contrast, the present application improves resistance to denting, rusting, and corrosion as well as providing easy installation, low friction, and hydrodynamic characteristics by forming a “lightweight, rust-resistant downcomer” “for attachment to a side of [a] marine vessel” having an “elongate impact portion made of an ultrahigh molecular weight polyethylene,” as recited in claim 1. Because the problem to be solved and the solutions offered to solve these problems differ in Scheelen and the present invention, Scheelen is not reasonably pertinent to the particular problems with which the inventor of the present invention was concerned and thus is nonanalogous art that cannot support an obviousness rejection.

Moreover, Scheelen describes a multi-layered pipe made of polyethylene, as recited in claim 1 of the present application. However, Scheelen does not describe the use of ultrahigh molecular weight polyethylene. Skilled persons appreciate that polyethylene and ultrahigh molecular weight polyethylene are two different materials.

With respect to independent claim 12, applicant chooses to rely on the arguments presented above with respect to independent claim 1 to support the patentability of independent claim 12.

With respect to dependent claims 2-11, 13, and 15-18, applicant chooses to rely on the arguments presented above with respect to independent claim 1 to support the patentability of these dependent claims.

Regarding the Examiner's rejection of dependent claims 4, 5, 15, and 16, the Examiner states that "Gibson teaches a pipe . . . [having] mounting holes" (page 2). Applicant disagrees with the Examiner's statement. Gibson states that "the conduit, lining and pipe are suitably fastened together through the use of a bolt" (col. 4, lines 22-24) (reference numerals omitted). Thus the bolt holds together the lining, the conduit, and the pipe. The bolt does not mount the ultrahigh molecular weight polyethylene lining or the stainless steel pipe to anything. Thus the holes in the lining and pipe through which the bolt extends do not act as "mounting holes," as recited in dependent claims 4, 5, 15, and 16 "for attaching [a] downcomer to the side of [a] marine vessel."

Applicant invites the Examiner to contact the undersigned by telephone, if the Examiner believes there are any issues outstanding. Applicant believes the application is in condition for allowance and respectfully requests the same.

Respectfully submitted,

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